

# PATENT SPECIFICATION

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## (54) PALLETS

(71) We, TILGATE PALLETS LIMITED, a British Company, of Brighton Road, Crawley, Sussex, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

This invention relates to pallets and to the wrapping of loads when stacked on such pallets, and is concerned with the provision of an improved form of pallet particularly adapted for use with a wrapping, e.g. a shrink-wrapping.

Amongst the known forms of conventional timber pallets are two-way-entry pallets and four-way-entry pallets, which comprise a load deck and a base or bottom deck (referred to herein as the base) separated by rectangular wooden spacer members in the form of blocks and/or bearers.

In this specification the term 'bearer' is used to define a spacer member in the form of an elongate beam, usually but not necessarily of solid wood, which extends longitudinally across substantially the whole length or width of the pallet between the load deck and the base.

In more detail the top deck and the base are usually connected:-

(a) in a two-way-entry pallet by two or more bearers and

(b) in a four-way-entry pallet by a block at each corner, one in the middle of each peripheral side and one centrally of the pallet making nine spacers in all, or by notched bearers.

When using such pallets it has become the practice to stack goods upon the load deck, and to provide them with a wrapping, e.g. to shrink-wrap the goods and the pallet by placing a large shrinkable plastic bag over the goods and around the peripheral sides of the pallet, and then to shrink the bag around the goods and pallet. Shrink-wrapping has

the following advantages:-

- 1. it provides security for the goods.
- 2. it keeps the goods stacked as desired, and binds them to the pallet, and
- 3. it protects the goods and prevents them collecting dust and dirt.

However, wooden pallets being used at present are not made with shrink-wrapping in mind.

One object of the present invention is to provide an improved construction of wooden pallet which is particularly suitable for use with a shrink-wrapping, to improve the binding together of the load and the pallet.

According to the present invention, a rectangular pallet comprises a load deck of rectangular profile and a base whose profile is substantially identical with and in register with that of the load deck, and a number of block-like spacer members in the form of blocks and/or bearers (as herein defined) disposed between the deck and the base to hold them in spaced parallel relationship, each spacer member having upper and lower faces, to which the deck and the base are respectively secured, and having intersecting end and side faces, and certain of the spacer members each presenting at least one outwardly facing side or end face (referred to as an outer face) disposed along a peripheral side of the pallet, each of the four peripheral sides having at least one such outerface of a spacer member extending along at least a part of its length, and each of the said outer faces of the spacer members comprises or includes an inwardly-inclined surface portion extending inwardly from a line substantially flush with and parallel to the edges of the deck and base to a line parallel to and inset from those edges, and extending from edge to edge of the said outer face in the direction of the length of that peripheral side of the pallet, these inwardly-inclined surface portions creating in all four

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- peripheral sides of the pallet recesses whose upper surfaces constitute overhanging peripheral lips beneath the margin of the deck whereby when the pallet is in use supporting a load on the load deck, a wrapping can be wrapped in tension circumferentially around the load and the peripheral sides of the pallet and will engage beneath the lips on all four peripheral sides of the pallet to secure the wrapping in position.
- Conveniently, at least some of the inwardly-inclined surface portions are plane.
- These plane surface portions, or at least some of them, may constitute the whole of their respective outer faces of the spacer members. In one such arrangement these plane inwardly-inclined outer faces extend upwardly and inwardly from their lower edges.
- In other constructions, at least some of the plane inwardly-inclined surface portions extend downwardly and inwardly from the upper edges of their respective outer faces of the spacer members.
- In yet other constructions of a pallet according to the invention, at least some of the plane inwardly-inclined surface portions are formed by chamfers provided along the upper parts only of the outer faces of the respective spacer members, the lower parts of the said outer faces being perpendicular to the load deck.
- In the case of a four-way-entry pallet having spacer members spaced apart in all four peripheral sides of the pallet, the inwardly-inclined surface portions will be provided on the outer faces of all of these members lying along all four sides of the pallet. For example, in cases where there is a spacer block at each corner of the pallet, each of the two outer faces of each corner spacer block which meet at the corner may be formed with one of the inwardly-inclined surface portions.
- In the case of a two-way-entry pallet whose spacer members comprise or include a pair of elongate bearers each extending along one of two opposite sides of the pallet, or a four-way-entry pallet with notched bearers, the inwardly-inclined surface portions are provided along both the longitudinal outer side faces and the end faces of those spacer bearers.
- An important feature of the improved pallet is that it enables the load deck and the base to be of the same size, while providing means to secure a wrapping firmly in position.
- The invention from another aspect comprises a wrapped load, being in combination a pallet having spacer members provided with the said inwardly-inclined surface portions on their outer faces as set forth above, a load on the load deck of the pallet, and a wrapping enclosing the load and extending circumferentially in tension around the four peripheral sides of the pallet with portions of the wrapping engaged beneath the said peripheral lips on all four sides of the pallet.
- The wrapping of such a wrapped load may be a shrink-wrapping shrunk over the load and around the sides of the pallet, and engaged beneath the lips by such shrinkage.
- From yet another aspect the invention comprises a method of wrapping a load upon the load deck of a pallet, which method comprises positioning the load on the load deck of a pallet having spacer members provided with the said inwardly-inclined surface portions as set forth above, and applying a wrapping around the load and circumferentially around the four peripheral sides of the pallet in such manner as to tension the wrapping in the circumferential direction and to cause portions of the wrapping to engage beneath the lips on all four peripheral sides of the pallet and so secure the wrapping to the four sides of the pallet below the load deck and bind together as an entity the load and the pallet.
- In the case where the wrapping is a shrink-wrapping, it is applied by being positioned over the load and around the four peripheral sides of the pallet in the unshrunk state and being there subjected to a shrinking operation to cause it to shrink and be tensioned around the load and around the circumference of the pallet.
- The invention may be carried into practice in various ways, but certain specific examples will now be described by way of example only, and with reference to the accompanying drawings which illustrate a four-way-entry pallet embodying the invention and in which:
- Figure 1 is a perspective view of the pallet, seen from underneath,
- Figure 2 is a fragmentary view in the direction of arrow X in Figure 1, and
- Figures 3, 4 and 5 are views similar to Figure 2 illustrating modifications.
- In the drawings the pallet 1 is made of timber and has a load deck 2 and a base 3, the load deck comprising seven boards 4 held together by three stringers 5, and the base 3 comprising five boards 7. Separating the load deck 2 from the base 3 are nine spacer blocks 6 to whose plane parallel upper and lower faces the load deck 2 and the base 3 are respectively attached. Eight of the spacer blocks are laterally disposed, that is to say spaced apart at the peripheral sides of the pallet, while the remaining one of the spacer blocks is disposed centrally of the pallet. Each laterally disposed spacer block 6 which lies mid-way along a side has one of its intersecting side and end faces, referred to as an outer face, which so disposed that it extends along and faces out-

wardly from the peripheral side of the pallet, whilst each of the corner spacer blocks has two of the said outer side faces which intersect at the corner of the pallet. As clearly illustrated in Figure 2 each outer face of each laterally disposed spacer block 6 comprises a plane surface which slopes or inclines upwardly and inwardly from the edge of the base 3 up to the top deck 2 so as to form a recess under the top deck 2 at the edge of the pallet, the upper surface of which recess affords an overhanging lip 8. The angle of slope of the outer faces is preferably about 15° but it can be varied according to need.

One advantage of providing the lips 8 is that a wrapping, e.g. a shrink-wrapping, can be engaged under the lips instead of merely gripping around the edge of the pallet. This provision can result in a saving of wrapping material, e.g. plastics material used for shrink-wrapping, and although that is not significant when one pallet only is being considered, when a large number of pallets are being wrapped the saving can be considerable. The lips give a positive location for the plastics film to shrink under when a shrink-wrapping is being used, and this considerably improves the grip of the wrapping on the four sides of the pallet.

Although the embodiment of Figures 1 and 2 is a four-way-entry pallet, the invention is also applicable to a two-way-entry pallet.

In the case of a two-way-entry pallet, each of the spacer bearers provided down two opposed sides may have three of the outer faces each of which is inwardly inclined to provide a recess defining an overhanging lip beneath the margin of the top deck.

Figures 3, 4 and 5 show other ways in which the lips 8 may be formed. In Figure 3, the blocks 6 are chamfered along the upper parts of their outer faces, whose lower parts are perpendicular to the deck 2 and base 3, the chamfer extending from a line about half-way up the outer face, which line is spaced above the lower edge of the block but is flush with the edges of the deck 2 and base 3; and the chamfer ends at the top face of the block 6 inboard of the edge of the deck 2. In Figure 4 the chamfer starts a little higher up the outer face of the block 6 than in Figure 3, and its angle of inclination is greater. In Figure 4 the stringer 5 of the deck 2 is shown.

In Figure 5, the outer faces of the blocks 6 are formed with V-shaped recesses, there being on each outer side face a downwardly- and inwardly-inclined plane surface portion 10 extending down from the upper edge of the outer face flush with the edge of the load deck 2, and an upwardly- and inwardly-inclined plane surface portion 11 extending up from the lower edge of the outer face of

the block flush with the edge of the base 3 and meeting the inclined surface portion 10 approximately midway in the height of the block.

Thus in the embodiments of Figures 3 and 4 the chamfers and the under sides of the edges of the load deck together form the recesses which define the lips 8 beneath the load deck, whilst in the embodiment of Figure 5 the lips 8 are formed by the inwardly-inclined surfaces 10.

#### WHAT WE CLAIM IS:-

1. A rectangular pallet which comprises a load deck of rectangular profile and a base whose profile is substantially identical with and in register with that of the load deck, and a number of spacer members in the form of blocks and/or bearers (as herein defined) disposed between the deck and the base to hold them in spaced parallel relationship, each spacer member having upper and lower faces to which the deck and the base are respectively secured, and having intersecting end and side faces, and certain of the spacer members each presenting at least one outwardly facing side or end face (referred to as an outer face) disposed along a peripheral side of the pallet, each of the four peripheral sides having at least one such outer face of a spacer member extending along at least a part of its length, and in which each of the said outer faces of the spacer members comprises or includes an inwardly-inclined surface portion extending inwardly from a line substantially flush with and parallel to the edges of the deck and base to a line parallel to and inset from those edges, and extending from edge to edge of the said outer face in the direction of the length of that peripheral side of the pallet, these inwardly-inclined surface portions creating in all four peripheral sides of the pallet recesses whose upper surfaces constitute overhanging peripheral lips beneath the margin of the deck whereby when the pallet is in use supporting a load on the load deck, a wrapping can be wrapped in tension circumferentially around the load and the peripheral sides of the pallet and will engage beneath the lips on all four peripheral sides of the pallet to secure the wrapping in position.

2. A pallet as claimed in Claim 1, in which at least some of the inwardly-inclined surface portions are plane.

3. A pallet as claimed in Claim 2 in which at least some of the plane inwardly-inclined surface portions constitute the whole of their respective outer faces of the spacer members.

4. A pallet as claimed in Claim 3 in which the said plane inwardly-inclined outer faces extend upwardly and inwardly from their lower edges.

5. A pallet as claimed in Claim 2 in

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which at least some of the plane inwardly-inclined surface portions extend downwardly and inwardly from the upper edges of their respective outer faces of the spacer members.

6. A pallet as claimed in Claim 2 in which at least some of the plane inwardly-inclined surface portions are formed by chamfers provided along the upper parts only of the outer faces of the respective spacer members, the lower parts of the said outer faces being perpendicular to the load deck.

7. A pallet as claimed in any one of Claims 1 to 6 which is a four-way-entry pallet having spacer members spaced apart in all four peripheral sides, on the outer faces of all of which members the said inwardly-inclined surface portions are provided.

8. A pallet as claimed in Claim 7 in which there is a spacer block constituting one of the spacer members at each corner of the pallet, and in which each of the two outer faces of each such corner spacer block which meet at the corner is formed with one of the said inwardly-inclined surface portions.

9. A pallet as claimed in any one of Claims 1 to 6 which is a two-way-entry pallet whose spacer members comprise or include a pair of elongate bearers each extending along one of two opposite peripheral sides of the pallet, or which is a four-way-entry pallet with notched bearers, and in which the inwardly-inclined surface portions are provided along both the longitudinal outer faces and the end faces of those spacer bearers.

10. A wrapped load comprising in combination a pallet as claimed in any one of the preceding Claims, a load on the load deck of the pallet, and a wrapping enclosing the load and circumferentially extending in tension around the four peripheral sides of the pallet with portions of the wrapping engaged beneath the said peripheral lips on all four sides of the pallet.

11. A wrapped load as claimed in Claim 10 in which the wrapping is a shrink-wrapping and is shrunk over the load and around the sides of the pallet and is engaged beneath the lips by such shrinkage.

12. A method of wrapping a load upon the load deck of a pallet, which comprises positioning the load on the load deck of a pallet constructed as claimed in any one of Claims 1 to 9, and applying a wrapping around the load and circumferentially around the four peripheral sides of the pallet in such a manner as to tension the wrapping in the circumferential direction and thereby to cause portions of the wrapping to engage beneath the lips on all four peripheral sides of the pallet and so secure the wrapping to the four sides of the pallet below the load deck and bind together as an entity the load and the pallet.

13. A method as claimed in Claim 12 in which the wrapping is a shrink-wrapping, and is applied by being positioned over the load and around the four peripheral sides of the pallet in the unshrunk state and being there subjected to a shrinking operation to cause it to shrink and be tensioned around the load and around the circumference of the pallet.

14. A pallet substantially as specifically described herein with reference to Figures 1 and 2, or to Figure 3, or to Figure 4, or to Figure 5 of the accompanying drawings.

15. A wrapped load on a pallet, substantially as specifically described herein with reference to Figures 1 and 2, or to Figure 3, or to Figure 4, or to Figure 5 of the accompanying drawings.

16. A method of protecting a load on a pallet, substantially as specifically described herein with reference to Figures 1 and 2, or to Figure 3, or to Figure 4, or to Figure 5 of the accompanying drawings.

KILBURN & STRODE,  
Chartered Patent Agents,  
Agents for the Applicants.

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                  Sheet 1

FIG. 1.

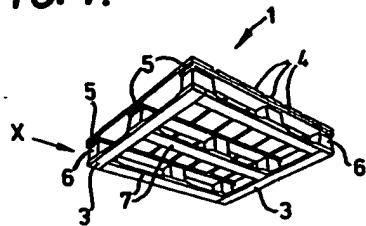
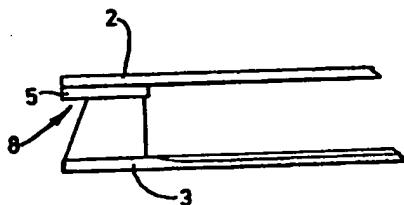


FIG. 2.



1517521

COMPLETE SPECIFICATION

2 SHEETS

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Sheet 2*

FIG. 5

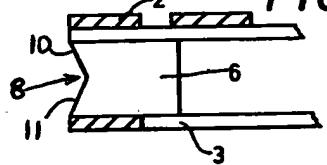


FIG. 3

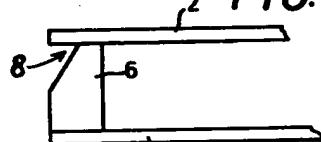
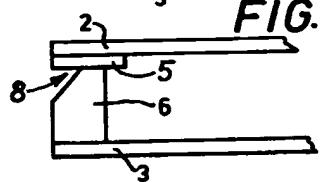


FIG. 4



DERWENT-ACC-NO: 1996-372575

DERWENT-WEEK: 199638

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TITLE: Stackable moulded plastic pallet for holding  
heavy metal parts - comprises rigid plastic moulding with  
flat receiving face for parts and non-slip plastic  
coating to prevent slippage

PATENT-ASSIGNEE: BAUER GMBH JULIUS [BAUEN]

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE
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ABSTRACTED-PUB-NO: DE 29610010U

BASIC-ABSTRACT:

A stackable workpiece carrier, for non-slip holding of parts, consists of a rigid plastics moulding (12) with a first receiving face (20) for the parts, the novelty being that both sides of the receiving face (20) have a 0.5-3 mm. thick coating (22,24) of a soft non-slip plastic with a Shore hardness of 10-40.

USE - As a pallet for holding heavy metal parts such as engine blocks during transport.

ADVANTAGE - The stackable carrier allows non-slip holding even of lubricant-contaminated heavy metal parts and avoids creation of wear particles even over long term usage.

CHOSEN-DRAWING: Dwg.2/3

TITLE-TERMS: STACK MOULD PLASTIC PALLET HOLD HEAVY METAL PART  
COMPRIZE RIGID  
PLASTIC MOULD FLAT RECEIVE FACE PART NON SLIP PLASTIC  
COATING  
PREVENT SLIP

DERWENT-CLASS: A92 Q32

CPI-CODES: A12-T;

ENHANCED-POLYMER-INDEXING:

Polymer Index [1.1]

018 ; G0033\*R G0022 D01 D02 D51 D53 ; H0000 ; H0011\*R ; S9999  
S1434

; P1150

Polymer Index [1.2]

018 ; R00708 G0102 G0022 D01 D02 D12 D10 D19 D18 D31 D51 D53 D58  
D76 D88 ; H0000 ; S9999 S1434 ; P1741 ; P1752

Polymer Index [1.3]

018 ; R00708 G0102 G0022 D01 D02 D12 D10 D19 D18 D31 D51 D53 D58  
D76 D88 ; R00817 G0475 G0260 G0022 D01 D12 D10 D26 D51 D53 D58  
D83

F12 ; R00806 G0828 G0817 D01 D02 D12 D10 D51 D54 D56 D58 D84 ;  
H0033

H0011 ; S9999 S1434 ; P0328 ; P1741 ; P0088 ; P0191

Polymer Index [1.4]

018 ; ND01 ; K9416 ; Q9999 Q8515 Q8366 ; K9574 K9483 ; K9687  
K9676

; K9712 K9676 ; B9999 B5243\*R B4740 ; Q9999 Q7885\*R

Polymer Index [1.5]

018 ; B9999 B4079 B3930 B3838 B3747 ; B9999 B5447 B5414 B5403  
B5276

Polymer Index [2.1]

018 ; H0135 H0124

Polymer Index [2.2]

018 ; ND01 ; K9416 ; Q9999 Q8515 Q8366 ; K9574 K9483 ; K9687  
K9676

; K9712 K9676 ; B9999 B5243\*R B4740 ; Q9999 Q7885\*R

Polymer Index [2.3]

018 ; Q9999 Q7114\*R ; B9999 B3827 B3747 ; B9999 B3792 B3747 ;  
B9999  
B5367 B5276

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DEUTSCHLAND



DEUTSCHES  
PATENTAMT

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⑯ Eintragungstag: 14. 8. 96  
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⑯ Stapelfähiger Werkstückträger zur rutschfesten Aufnahme von Teilen

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